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A shut-down watch in the No. 1 main-machinery room (MMR) aboard an aircraft carrier sees a drop in firemain pressure. He calls his counterpart in the No. 2 MMR, who reports normal pressure. In DC central, though, the chief auxiliaries officer and the DC-watch supervisor see a big drop in firemain pressure on their gauges.

The chief auxiliaries officer starts No. 3 and No. 6 fire pumps, without knowing what is causing the drop in pressure. He then gets a report from the shut-down watch in the No. 1 MMR that pressure has returned to normal. Minutes later, the DC-watch supervisor sends the sounding-and-security watch to investigate the cause of the pressure problem.

Meanwhile, the shut-down watch in the No. 2 MMR checks on a paint job in the 4B shaft alley and finds 3 feet of water in the bilge. Water also is circulating around the main-drain-relief valve. He secures the bulkhead-isolation valve for the forward main drain and proceeds to the 4A shaft alley (list control) to investigate a rumbling sound—without reporting what he has found. In list control, he finds major flooding and reports it to the DC-central watch, who

passes word of the casualty over the 1MC.

Casualty-assistance teams from the reactor division respond, secure the source of the flooding, and dewater the space, using three submersible pumps. Equipment damage is estimated at \$80,000.

How could this happen? The problem started after maintenance was completed on the No. 1 and No. 2 list-control pumps. A supervisor sent a fireman apprentice to the 4A shaft alley (list control) to clear danger tags on the pumps. This job should have been simple, but the fireman apprentice wasn't familiar with the list-control system, and no one accompanied him to the work site. He mistakenly opened the starboard-discharge valve, the main drainage to list-control pumps, the starboard-suction valve, and the firemain-supply-cutout valve. Then he



heard a loud knocking sound and saw a small amount of water dripping from a drain.

No one knows for sure what caused the knocking, but some engineering people suggest it could have been the partly open firemain-supply valve slamming against the valve body. It also could have been water rushing through the firemain-supply piping and activating the eductor system. The water coming from the drain indicated that the shut-down watch in the No. 2 MMR probably hadn't completely closed the main-drain, bulkhead-isolation valve to the 4B and 4A shaft alleys. Being unfamiliar with the system, though, the fireman apprentice didn't report the noise or the leak.



Investigators cited the improper clearance of the danger tags as one cause of this mishap. Did the supervisor know the fireman apprentice wasn't familiar with the system? Why didn't the fireman apprentice tell his supervisor he wasn't sure what he was supposed to do? As a supervisor, do you allow your people to speak freely about maintenance and training issues?

Here are other causes cited during the investigation of this mishap:

- The danger-tag-authorization form showed the wrong positions for clearing the valves. Did the people who filled out this form understand the list-control system? Did they refer to the system's operating diagram and include a copy showing the valves that would be affected and the position in which they should be turned? Did the authorizing officer review the form and compare it with what was written on the diagram? Did the engineer officer, DC assistant, engineering duty officer, and DC-central watch supervisor know the list-control system would be tagged out?

- The shut-down watch in the No. 1 MMR didn't report the loss of firemain pressure to DC central as soon as it occurred. Why did they wait until he found

This operator understands how a ship's list-control system works. A fireman apprentice assigned to clear some danger tags on pumps in a similar system, however, wasn't familiar with what he was doing.

the cause? Are your watchstanders trained to report problems as soon as they happen?

- DC supervisors should have found the reason for the drop in firemain pressure before bringing more fire pumps on line. Did anyone notify the engineering duty officer before starting the pumps? Do you train your at-sea and in-port duty watch sections in the correct response to this type of casualty?

The author was assigned to the Naval Safety Center when he wrote this article.